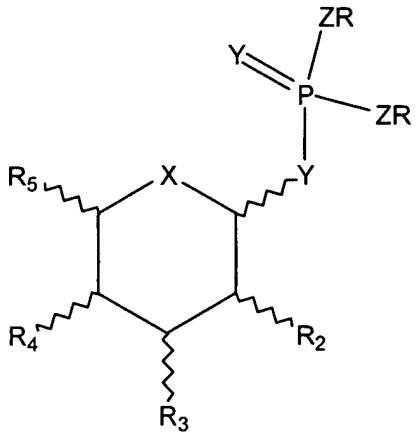
Claims:

1. **(currently amended)** A compound represented by structure **1**:



1

wherein

X represents O;

Y represents independently for each occurrence O;

Z represents independently for each occurrence O;

R is selected, independently for each occurrence, from the group consisting of [[H,]] alkyl, heteroalkyl, aralkyl, heteroaryl, and heteroaralkyl;

R' is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl;

R" is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aralkyl, heteroaryl, and heteroaralkyl;

R_2, R_3, and R_4 are independently selected from the group consisting of R_6, -OR', -SR', -NR'$_2$, -OSO_3H, and -OPO_3H_2;

R_5 is selected from the group consisting of R_6, ~~-$(CR_2)_n$OR'~~ -$(CR"_2)_n$OR', ~~-$(CR_2)_n$SR'~~ -$(CR"_2)_n$SR', and ~~-$(CR_2)_n$NR'$_2$~~ -$(CR"_2)_n$NR'$_2$;

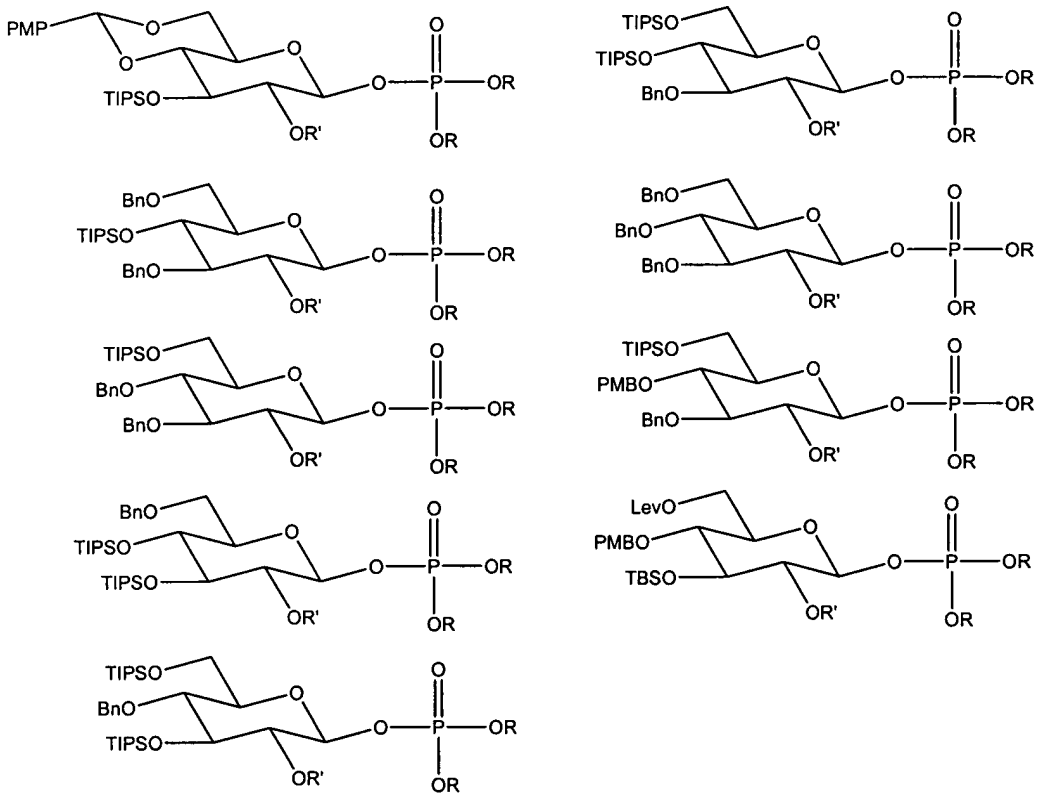
R_6 is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl; and

n is an integer selected from the range 0 to 10 inclusive.

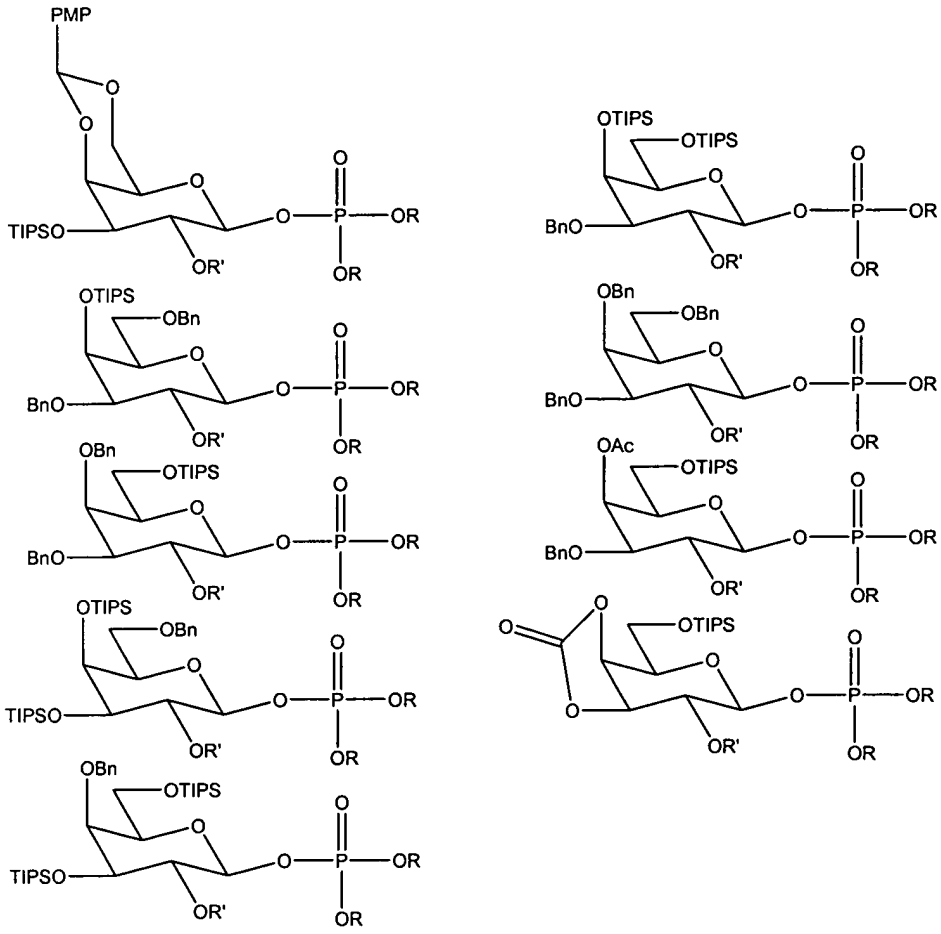
Claims 2-22 **(canceled)**

23. **(previously presented)** The compound of claim 1, wherein said compound is represented by one of the following structures:

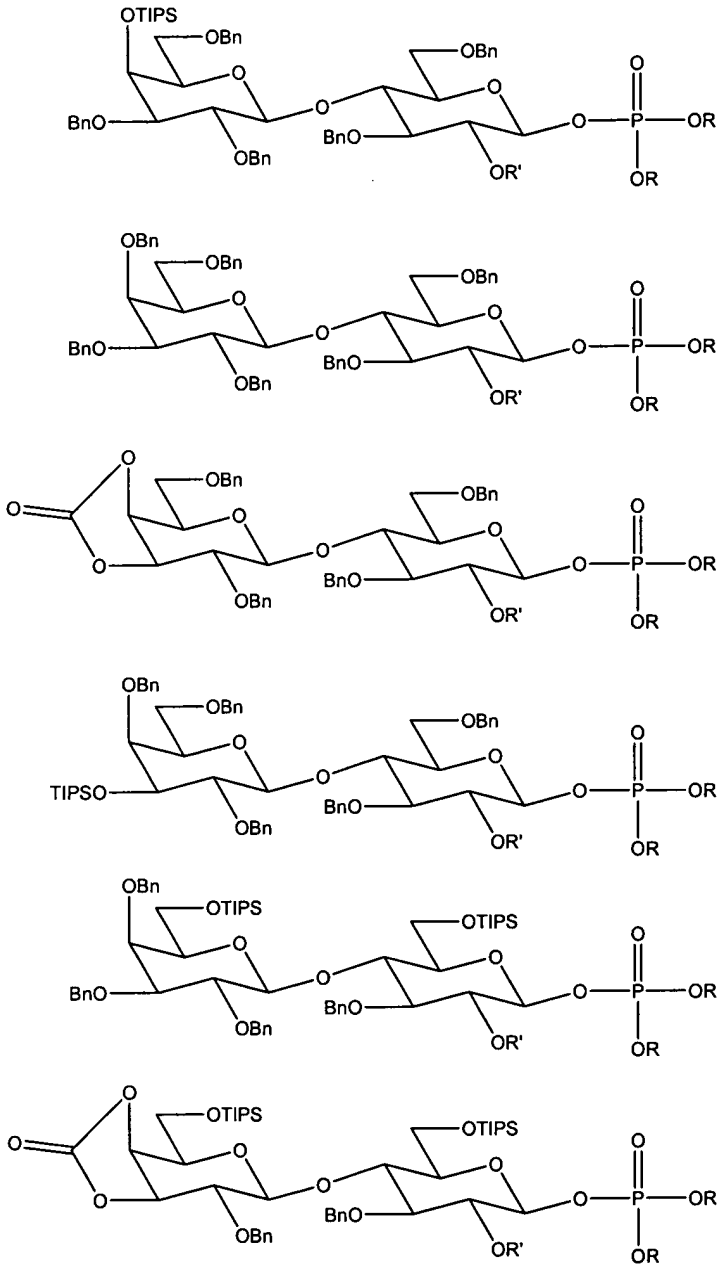
Glucose



Galactose


PMP
TIPSO
OR'
OR
OTIPS
OBn
BnO
OTIPS
OTIPS
BnO
OR'
OR
OBn
OBn
BnO
OR'
OR
OAc
OTIPS
BnO
OR'
OR
O
O
O
OTIPS
OR'
OR

Lactose



wherein

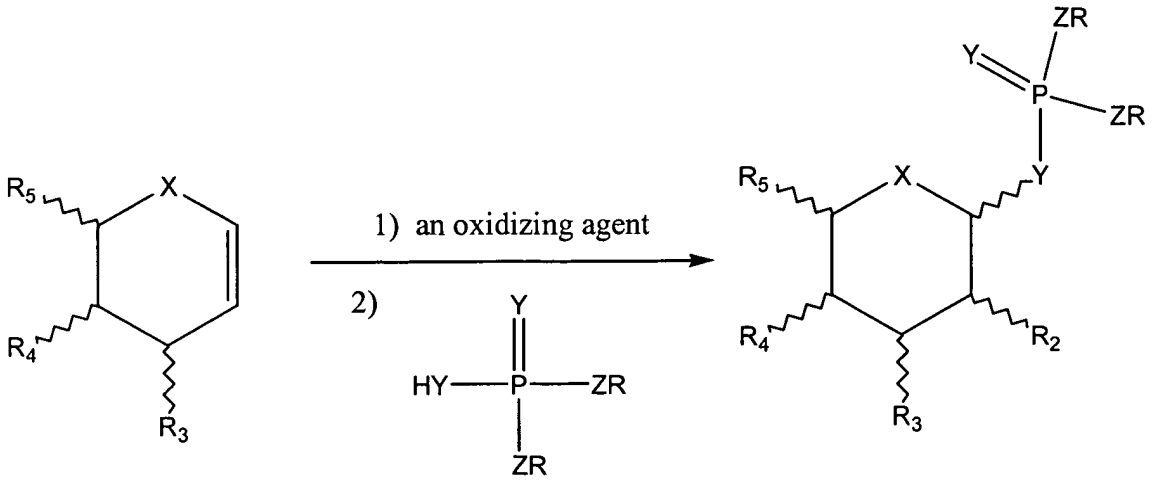
TIPS represents triisopropylsilyl;

PMP represents paramethoxyphenyl; and

Bn represents benzyl.

Claims 24-41 (**canceled**)

42. **(previously presented)** A method of synthesizing a compound represented by **1**, wherein said method is represented by the following scheme:



1

wherein

X represents O;

Y represents independently for each occurrence O;

Z represents independently for each occurrence O;

the oxidizing agent is selected from the group consisting or dioxiranes, percarboxylates, and persulfates;

R is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl;

R' is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl;

R_2 is OR';

R_3, and R_4 are independently selected from the group consisting of R, -OR', -SR', -NR'$_2$, -OSO_3H, and -OPO_3H_2;

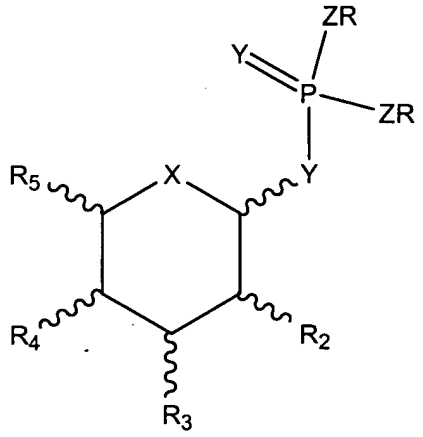
R_5 is selected from the group consisting of R, -$(CR_2)_nOR'$, -$(CR_2)_nSR'$, and -$(CR_2)_nNR'_2$; and

n is an integer selected from the range 0 to 10 inclusive.

43. (**original**) The method of claim 42, wherein the oxidizing agent is a dioxirane.

44. (**original**) The method of claim 43, wherein the oxidizing agent is dimethyl dioxirane (DMDO).

45. (**currently amended**) A compound represented by structure **2**:



2

wherein

X represents O;

Y represents independently for each occurrence O;

Z represents independently for each occurrence O;

R represents independently for each occurrence aryl;

R' is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl;

R" is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl;

R_2 is selected from the group consisting of R_6, -OR', -SR', -NR'$_2$, -OSO_3H, and -OPO_3H_2;

R_3, and R_4 are independently selected from the group consisting of R_6, -OR_7, -SR', -NR'$_2$, -OSO_3H, and -OPO_3H_2;

R_5 is selected from the group consisting of R_6, ~~$-(CR_2)_nOR'$~~ $-(CR''_2)_nOR'$, ~~$-(CR_2)_nSR'$~~ $-(CR''_2)_nSR'$, and ~~$-(CR_2)_nNR'_2$~~ $-(CR''_2)_nNR'_2$;

R_6 is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, and heteroaralkyl;

R_7 is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, heteroaryl, heteroaralkyl, and sulfonyl; and

n is an integer selected from the range 0 to 10 inclusive.

46. (**new**) The compound of claim 45, wherein R_2 is selected from the group consisting of R_6, -SR', $-NR'_2$, $-OSO_3H$, and $-OPO_3H_2$.

47. (**new**) The compound of claim 45, wherein R_5 is selected from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, $-(CR''_2)_nOR^C$, $-(CR''_2)_nSR^S$, and $-(CR''_2)_nN(R^N)_2$; R^C is selected from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, and sulfonyl; R^S is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl; and R^N is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl.

48. (**new**) The compound of claim 1, where in R is selected, independently for each occurrence, from the group consisting of alkyl, heteroaryl, and heteroaralkyl.

49. (**new**) The compound of claim 1, wherein R_5 is selected from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, $-(CR''_2)_nOR^C$, $-(CR''_2)_nSR^S$, and $-(CR''_2)_nN(R^N)_2$; R^C is selected from the group consisting of alkyl, heteroalkyl, aryl, heteroaryl, heteroaralkyl, acyl, and sulfonyl; R^S is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl; and R^N is selected, independently for each occurrence, from the group consisting of H, alkyl, heteroalkyl, aryl, aralkyl, heteroaryl, heteroaralkyl, acyl, and sulfonyl.